

Draft Architecture of the Washington State Community Interoperability Network  
1/30/2006

The draft architecture of the Washington State Community Interoperability Network (WSCIN) is that of a federated model designed to allow direct interface with existing centralized regional systems such as INHS and the Peace Health/Whatcom County. The first 5 components of the Interoperability architecture in the schematic, shown in Figure 1, are different parts of the delivery system.

Acronyms:

EHR – Electronic Health Record

EPS – Edge Proxy Server

HIT – Health Information Technology

INHS – Inland Northwest Health Systems

MPI – Master Patient Index

PACS – Picture Archiving and Communication System

PBM – Pharmacy Benefits Manager

PHI – Protected Health Information

VNS – Visiting Nurse Services

WSCIN – Washington State Community Interoperability Network

Delivery System Components:

1. **Existing centralized data-sharing entities:** Existing systems such as Peace Health/Whatcom County and Inland Northwest Health System INHS will require no changes to interface directly with the statewide interoperability network. The interface will require an Edge Proxy Server (EPS) to create normalized data for the WSCIN data warehouse.
2. **New HIT collaborations.** New networks, such as an EpicCare consortium along the I-5 corridor, a Community Health Clinic network using a single EHR such as NextGen, or new county wide single vendor collaborations such as Kittitas County will be encouraged. These new collaborations, based on regional, socio-demographic or business relationships, will interface directly with the WSCIN through an EPS.
3. **Free standing clinics.** Once they have installed an EHR, free standing clinics of any size will have the option of either interfacing directly with the WSCIN through an EPS, or forming a new HIT collaborative, which will connect to the WSCIN.
4. **Long Term Care Facilities.** Once electronic records for long term care facilities have been developed, these entities will interface with the WSCIN in a manner identical to any other part of the delivery system.
5. **Home health agencies,** visiting nurses and nurse case managers will be able to access patient records and enter information about their patients directly into the WSCIN from multiple locations through a terminal web server, or through the information system of one of the delivery systems entities.

Data Conduit Service:

6. The encrypted transfer of data from the Edge Proxy Servers of the participating delivery system entities to the data warehouse will be contracted out to a data conduit service. This service provider will not be allowed to de-encrypt or store the data. For a schematic of the data conduit service see Figure 2.

Data Warehouse: The data warehouse will be a centralized data storage facility managed by a “Trusted” Third Party with a governance structure and business model to be determined.

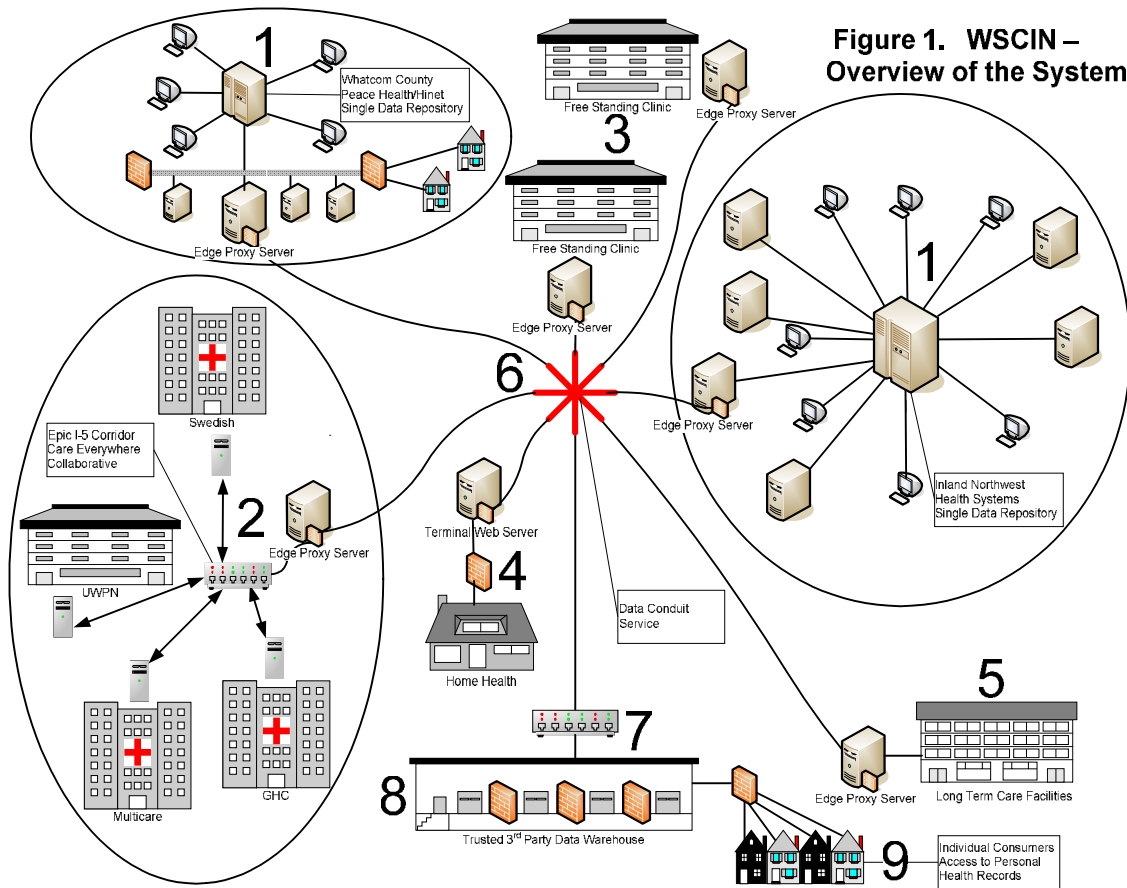
7. **Master Patient Index.** The MPI will be under the control of the Trusted 3<sup>rd</sup> Party responsible for the Data Warehouse.
8. The data warehouse will contain information in 4 separate formats, each with a different security system and each supporting different functionalities. See Figure 3 for a schematic of the data warehouse.
  - a. PHI: Protected Health Information will be kept in a maximal security format for use in high speed interoperability and for disaster recovery. Data from PBMs and Health Insurance Companies will be integrated with the PHI from various parts of the delivery system and made available to providers and patients using standard authentication procedures.
  - b. De-Identified Data Set: The de-identified data will be used for disease reporting, syndromic surveillance and outcomes research.
  - c. Limited Data Set: The limited data set will be used for actuarial reporting for health insurance companies, and population management outcomes reporting for pay-for-performance measures.
  - d. Patient Health Record: see 9 below
9. **Patient Health Record:** Patients will be able to create and maintain a personal health record with the WSCIN. This record will be separate from the PHI record for that patient, and will interact with the PHI record in ways to be determined.

Functionality: The information available to providers and patients will be

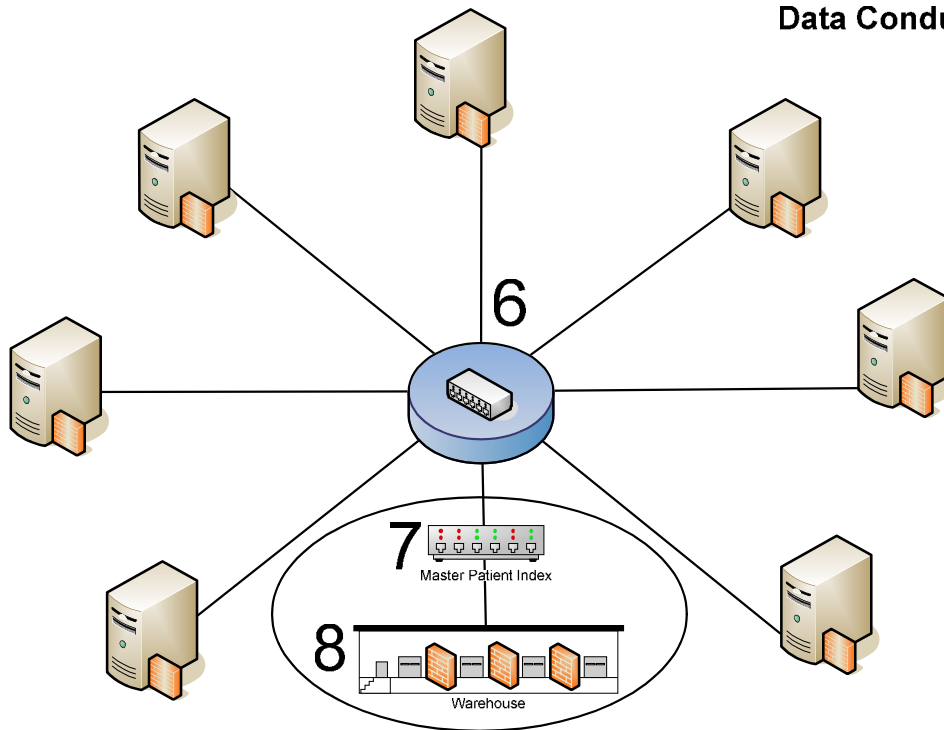
1. **In-patient (hospital):** Health information will be normalized by the edge proxy server for a hospitals or an HIT consortium to which the hospital belongs and then transmitted to the data warehouse via the data conduit service.
2. **Out-patient (clinic):** Health information will be normalized by the edge proxy server for a clinic or an HIT consortium to which the clinic belongs and then transmitted to the data warehouse via the conduit server.
3. **Long Term Care:** Health information will be normalized by the edge proxy server for the long term care facility or an HIT consortium to which the facility belongs and then transmitted to the data warehouse via the conduit server.
4. **Home Health/VNS/Nurse Case Managers and Population Managers:** Nurses functioning across delivery systems will have the option of going through the EMR software run by a clinic system or hospital by which they are employed, or accessing the accessing the WSCIN directly through a terminal web server. In either case they will have access to the entire record, and any clinical data

gathered by the VNS/Nurse Case Manager will be added to the WSCIN data set for that patient.

5. **Personal Health Record:** Individual patients will access their record, and/or the record for a family member whose record they are authorized to access as care giver, via password protected secure internet website.
6. **Labs:** Laboratory data will be routed to the WSCIN through the edge proxy server for the part of the delivery system in which the lab test was ordered. In the case of home monitoring of such lab tests as blood sugar or INR, the results will be entered by the patient into their PHR and from there integrated with their PHI record.
7. **Medications:** All current medications (those medications for which an order has been written in an EHR and for which no discontinuation order exists) will appear on the current medication list of the PHI record in the data warehouse. This will include all medications prescribed in any part of the delivery system. Data from PBMs on refills of specific medications will be displayed in the patient's med list in the PHI portion of the data warehouse. Patients, providers (including visiting nurses) and their clinical staff will be able to view this list and compare it to the medications the patient is actually taking. Providers (or their staff) will discontinue in the EHR any medication that the patient reports he or she is no longer taking, which will cause the data warehouse medication list to be updated. Patients viewing their med list through their personal health record will notify their physician of any errors in their medication list via secure messaging, and the provider will discontinue those medications in the patient's EHR, thereby causing the data warehouse list to be up-dated.
8. **Imaging:** Radiology reports from EMRs and digital images from PACS files will be included in the PHI section of the data warehouse. This information will come in from the delivery systems in which the tests were ordered.
9. **Claims:** Relevant claims data will be obtained from the health insurance companies and added to the PHI section of each patient's chart in the data warehouse.
10. **Secure Messaging:** The WSCIN will include a feature for secure messaging between patients and their providers, and between providers of different delivery systems. This secure messaging will be designed to interface directly with existing secure messaging systems between patients and providers in existing EHRs so that messages routed through the WSCIN will be incorporated into existing workflows.



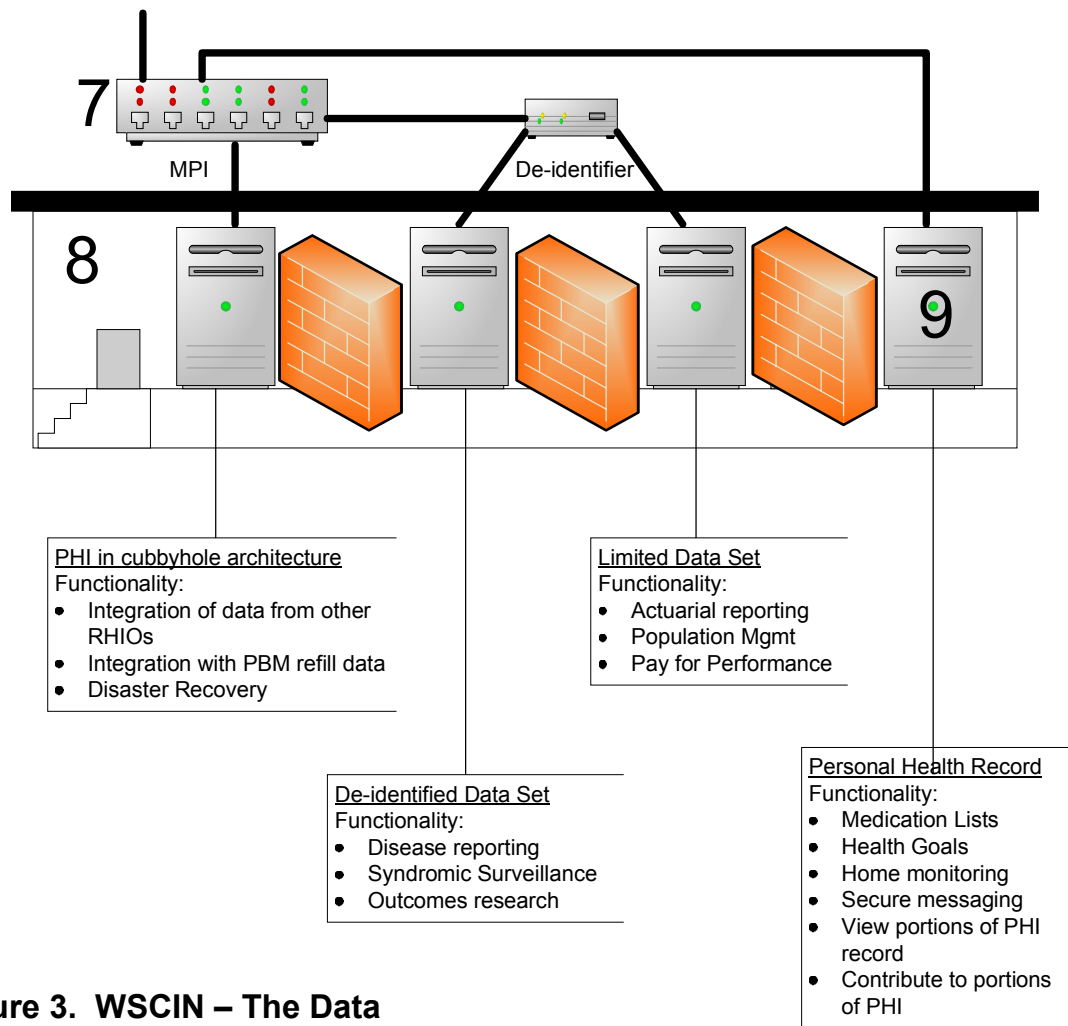
**Figure 2. WSCIN – The Data Conduit Service**



The Data Conduit Utility – May be a separate for profit company (e.g. Health Unity). There is no reason that there could not be multiple competing Data Conduit vendors.

Functionality:

- Move encrypted data from Point A to Point B
- Prohibited from de-encrypting the data



**Figure 3. WSCIN – The Data Warehouse Structure and Function**